From Trash to Grass

Revegetating Army Training Grounds

Conveyor system used to transport and prepare army garbage before it's ground into a pulp. Garbage is put through a hydrolyzer that uses high temperature and steam pressure to sterilize it. Photo taken at and provided by the U.S. Army Engineer Research and Development Center, Construction Engineering Research Laboratory, Champaign, Illinois. (K11331-1)

The U.S. Army is trying to address several environmental problems. One is that it's running out of space for trash disposal. The Army spends $100 million to dispose of 2 million tons of garbage each year in 12 landfills. These landfills are filling up and new ones can't be built.

A second problem is that heavily used Army training areas are becoming bare of vegetation because of constant traffic from heavy equipment and foot soldiers. This leads to soil erosion and compaction problems, which make it difficult to revegetate these areas.

The Agricultural Research Service (ARS) has teamed up with the Army to help solve these problems by converting trash into a pulp that can be used to improve soil and help establish native grasses.

Instead of being dumped in landfills, garbage is placed on a conveyor system that separates out metals. The leftover material can then be ground into a pulp. This system also uses high-temperature and high-pressure steam to sterilize and help break down the pulp. It's then dried and air-separated to remove plastics. The final product has a neutral pH and contains nitrogen, phosphorus, and potassium.

ARS, led by soil scientist H. Allen Torbert of the National Soil Dynamics Laboratory, Auburn, Alabama, planted native grasses on two Army bases after this pulp material was applied to the Army's land. Torbert is studying the chemical properties of soil after pulp introduction. Soil scientist Ken Potter of ARS's Blacklands Research Center, in Temple, Texas, works with Torbert in studying physical properties of soil after pulp is added.

On the first 2-year research plots, located at Fort Campbell, Kentucky, native grasses were successfully established and a significant increase in plant biomass occurred between the first and second year of study, according to Torbert. The researchers were able to make the soil fertile once again.

"We're doing an excellent job of revegetating training areas in Fort Benning, Georgia," Torbert says of their second research location. These soils were very poor and required more pulp material. Restoration efforts were a huge success in the first year, with the planted native grass species becoming well established.

The Army agrees with Torbert's assessment. "I'm convinced it is indeed a success at both locations," says Dick Gebhart, project manager at the U.S. Army Engineer Research & Development Center, Champaign, Illinois. Deborah Curtin, another project manager, says there is great interest in expanding these projects to other military bases.

What the researchers learn in this study should be applicable to civilian turfs as well, such as home lawns, golf courses, and parks. The findings could also help improve degraded agricultural soils.—By **David Elstein,** ARS.

This research is part of Soil Resource Management (#202) and Manure and Byproduct Utilization (#206), two ARS National Programs described on the World Wide Web at www.nps.ars.usda.gov.

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